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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/070,616	07/15/2002	Yoshinori Fukuba	7398/72632	9380

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EXAMINER

DONG, DALEI

ART UNIT PAPER NUMBER

2875

DATE MAILED: 03/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center">Office Action Summary</p>	Application No. 10/070,616	Applicant(s) FUKUBA ET AL.	
	Examiner Dalei Dong	Art Unit 2875	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10-13 and 21-25 is/are allowed.
- 6) ☒ Claim(s) 1-9, 33 and 34 is/are rejected.
- 7) ☒ Claim(s) 14-20 and 26-32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. The receipt of response to Election/Restriction filed February 5, 2004, is acknowledged and the argument provided by the Applicant deemed persuasive, therefore, Examiner withdraw the Election/Restriction issued on January 9, 2004.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claims 1, 4, 17, 25 are objected to because of the following informalities: the outside brackets [] are confusing and can be interpreted as deleting the claimed limitation within the bracket.. Appropriate correction is required.
4. Claims 14-20 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 13. See MPEP § 608.01(n). Accordingly, the claims 14-20 are not been further treated on the merits.

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5. Claims 26-32 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 24 and 25. See MPEP § 608.01(n). Accordingly, the claims 26-32 are not been further treated on the merits.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-8 and 33, rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 6,188,824 to Teshima.

Regarding to claims 1-4, 7-8 and 33, Teshima discloses “a core resin for the multicore plastic optical fiber of the present invention. The well-known polymethylmethacrylate type resins are used as a particularly preferable resin. Such polymethylmethacrylate resins include a methylmethacrylate homopolymer and a copolymer containing 50% by weight or more of methylmethacrylate. Copolymerizable components include acrylic acid esters such as methyl acrylate, ethyl acrylate and butyl acrylate; methacrylic acid esters such as ethyl methacrylate, propyl methacrylate and cyclohexyl methacrylate; maleimides such as isopropyl maleimide; acrylic acid; methacrylic acid; styrene; and the like. From these components, one or more components are appropriately selected for copolymerization. In addition, styrene type resins can be preferably employed.

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For example, a styrene homopolymer, a copolymer of styrene and methylmethacrylate and the like are exemplified. Further, polycarbonate type resins can be also preferably used. The polycarbonate type resins are characterized in high heat resistance and low moisture absorption. Moreover, CYTOP.RTM. resin manufactured by Asahi Glass Co., Ltd., TEFLON AF.RTM. resin manufactured by Du Pont, ARTON.RTM. resin manufactured by JSR Co., Ltd. and the like, which have been proposed as core resins for plastic optical fibers, are applicable to core resins" (column 4, lines 11-34).

Teshima also discloses "the first cladding resin, there can be specifically exemplified resins containing fluoroalkyl methacrylate, vinylidene fluoride type resins, alloys prepared by mixing a vinylidene fluoride type resin with a methacrylate type resin and the like in case the core resin is MMA type resins. Particularly for transmission use, a fluoroalkyl methacrylate resin is preferable since it does not have crystalline properties and does not change in the loss at a high temperature. As fluoroalkyl methacrylate, the component represented by the following formula is exemplified" (column 4, lines 58-67).

Teshima further discloses "the second cladding resin must have lower refractive index than the first cladding resin. The lower the refractive index of the second cladding resin is, the more appropriate to the present invention such a resin is. As well as the first cladding resin, the resins having low refractive index such as a fluoroalkyl methacrylate type resin, a vinylidene fluoride type resin, TEFLON AF.RTM. manufactured by Du Pont and CYTOP.RTM. manufactured by Asahi Glass Co., Ltd. are preferable as the second cladding resin. A

vinylidene fluoride type resin is more preferable. This is because the vinylidene fluoride type resin possesses flexibility and mechanical strength. Further, when the first cladding resin is a fluoroalkyl methacrylate type resin or a mixture of a vinylidene fluoride type resin and a methacrylate type resin, the second cladding resin of the vinylidene fluoride type adheres well to the first cladding layer to form a multicore plastic optical fiber with high mechanical strength. The vinylidene fluoride type resin includes a copolymer of vinylidene fluoride and tetrafluoroethylene, a copolymer of vinylidene fluoride and hexafluoropropene, a copolymer of vinylidene fluoride and hexafluoroacetone, a copolymer of vinylidene fluoride and trifluoroethylene, a copolymer of vinylidene fluoride, trifluoroethylene and hexafluoroacetone, a copolymer of vinylidene fluoride, tetrafluoroethylene and hexafluoroacetone, a copolymer of vinylidene fluoride, trifluoroethylene and hexafluoroacetone, a copolymer of vinylidene fluoride, tetrafluoroethylene and hexafluoropropene and the like” (column 5, line 55 to column 6, lines 14).

Teshiam furthermore discloses “the fourth resin includes a vinylidene fluoride type resin, a nylon 12 resin, a polycarbonate resin, a PMMA resin and the like. When the vinylidene fluoride type resin is employed, it is possible in the present invention to employ a resin having lower refractive index than the second cladding resin and form a multicore plastic optical fiber with a three layered cladding” (column 6, lines 15-22).

Regarding to claims 5 and 6, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, this limitations has not been given patentable weight.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 9 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,188,824 to Teshima.

Regarding to claims 9 and 34, it is old and well known in the art to plug the optical fiber in order to obtain the plugged optical fiber, thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to have plug the end of the optical fiber to obtain plugged optical fiber and further it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987).

Allowable Subject Matter

10. Claims 10-13, 21-25 are allowed.

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11. The following is an examiner's statement of reasons for allowance: the prior art of record fails to teach or suggest a production method of a plastic optical fiber, comprising the step of annealing a plastic fiber obtained by heat-drawing an undrawn fiber obtained by melt spinning, at a circumferential velocity ratio between the front and rear rollers of 0.5 to 1.2 under heating conditions which satisfy $4 \leq y \leq -1.5x + 330$ and $(T_{gc} - 5) \text{ degree Celsius} \leq x \leq (T_{gc} + 100) \text{ degree Celsius}$ wherein T_{gc} represents a glass transition temperature of a core, x represents an annealing temperature and y represents an annealing time.

The prior art of record teaches the method of fabricating a plastic optical fiber obtained by heat-drawing an undrawn fiber obtained by melt spinning, however prior art of record fails to teach or suggest a circumferential velocity ratio between the front and rear rollers of 0.5 to 1.2 under heating conditions which satisfy $4 \leq y \leq -1.5x + 330$ and $(T_{gc} - 5) \text{ degree Celsius} \leq x \leq (T_{gc} + 100) \text{ degree Celsius}$ wherein T_{gc} represents a glass transition temperature of a core, x represents an annealing temperature and y represents an annealing time.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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U.S. Patent No. 4,687,295 to Koishi.

U.S. Patent No. 4,768,860 to Tatsukami.

U.S. Patent No. 4,798,445 to Yamamoto.

U.S. Patent No. 5,111,526 to Yamamoto.

U.S. Patent No. 5,148,511 to Savu.

U.S. Patent No. 6,132,650 to Nakamura.

U.S. Patent No. 6,185,353 to Yamashita.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (571)272-2370.

The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (571)272-2378. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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D.D.

February 24, 2004



ALAN CARUSO
PRINCIPAL EXAMINER